THE CHEMIST

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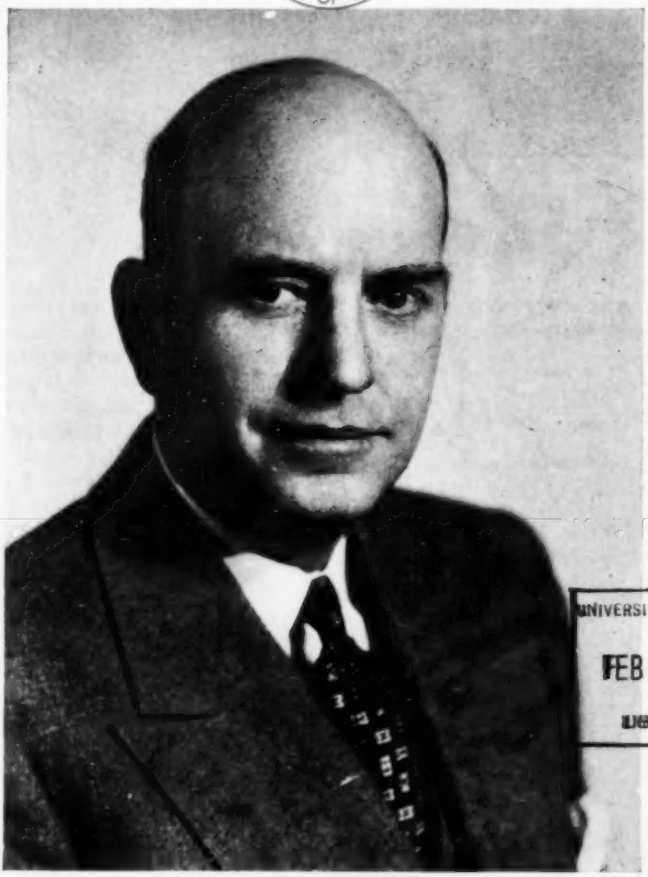

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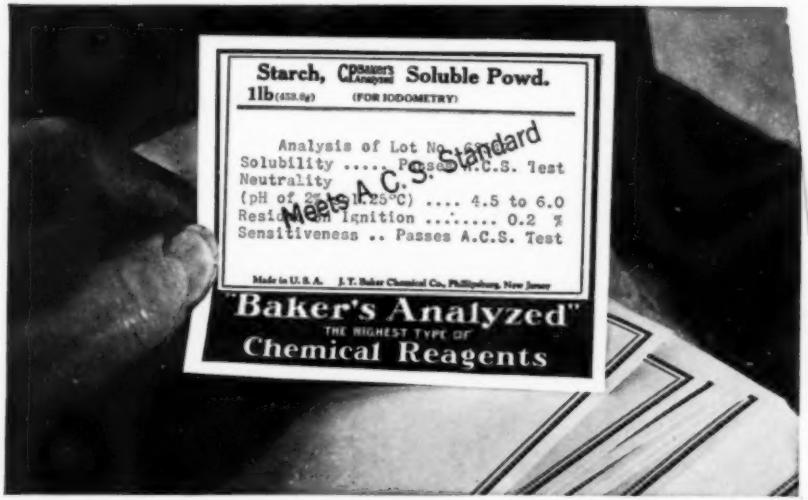
(See Page 9)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IN THIS ISSUE

Research Requires an Organized Plan 7
A.I.C. Gold Medal Awarded to Dr. Charles Allen Thomas 9
Professional Program Designed for Student Chemists 10
Problems of the Younger Chemists 11
Trends—The Past Is Prologue 17
The Question—The Answers 21
The Ethics of the Research Worker 23
Necrology 28
Comment 29
Council 33
Chapters 36
For Your Library 38
Booklets 39
Opportunities 40
Chemical Condensates 42
Professional Services ..... 32 & 43

Scheduled for an Early Issue of The Chemist

"The Role of Government in Research," Dr. Gustav Egloff
"Opportunities in Chemical Market Research," John P. Duane
"The Research Organization," Frederick W. Adams
"Early History of the A.I.C.," Dr. Lloyd Van Doren
"Visit to a Flax Paper Mill"
Report of the Chicago A.I.C. Chapter Committee on Professional and Economic Status.

Special Silver Anniversary Articles

"Development of Chemical Industry in the South," Dr. Stewart J. Lloyd
"Women in Chemistry (1923-1948)," Florence E. Wall
"The Professional Status of Chemists (1923-1948)," Walter J. Murphy
"Chemists' Contributions (1923-1948) to:
Biochemistry," Dr. E. A. Doisy
Cosmetics," Signe L. Sherman
Fatty Acids," Dr. A. W. Ralston
Magnesium," Dr. Willard H. Dow
Paints and Varnishes," V. C. Bidlack
Pharmaceuticals," Dr. E. H. Northey
Printing Inks," F. G. Schleicher
Rubber," Dr. Harry L. Fisher
Other Articles.

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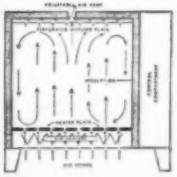

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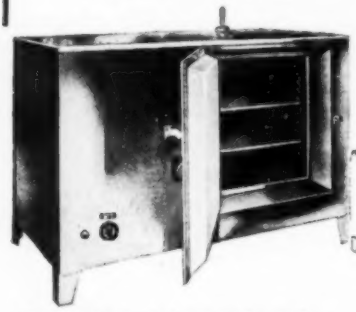

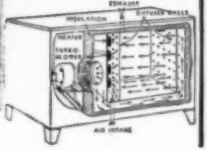

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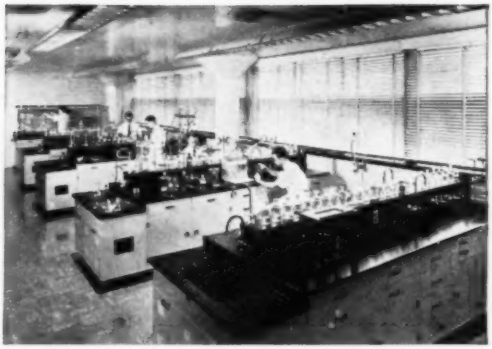

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Research Requires an Organized Plan

Dr. M. L. Crossley, F.A.I.C.

Director of Research, American Cyanamid Company, Calco Chemical Division

(A talk given before the New York Chapter, A.I.C., November 20th.)

RESEARCH is organized effort and requires planning. Random experimentation wastes time, energy, and material; besides, it fosters mental inertia. Thinking must precede doing. Trying this and that to find out what will happen may satisfy curiosity but it is not an intelligent way to conduct research.

One must know what his objective is before he can plan a program to realize it. A clear undestanding of the ideas behind the objective is indispensable. Each idea must be analyzed without prejudice and with a knowledge of all facts pertaining to it. The available information that would help to determine the soundness of the idea and its applicability to the problem must be assembled and digested. It may not be a problem at all. Too often it is found, after considerable work has been done, that the information was already available had the investigator taken the trouble to look for it before indulging his fancy by experimenting promiscuously.

It appears to be a common human weakness for one to assume that since he does not know what he wishes to know, it is not known to others and that he had better find out himself by experimenting. The available information, often in the laboratory files, may not be a complete and satisfactory answer to the question but a study of it may throw new light on the problem to be investigated. There is no substitute for a thorough understanding of the problem.

When the problem is fully understood it may prove to be unimportant and not worth investigating. Seldom is it true that there is but one choice. Many problems await investigation or ideas press for consideration; so, one must elect to give priority to the work that seems most worth while; that which it is believed will give the information most needed at the time.

When the problem is believed to be worth investigating, the next important consideration in the plan is the most suitable method of attack. This requires a careful examination of the several factors involved and a judgment as to the potential importance of each. It may be necessary to do a certain amount of preliminary laboratory exploration to get an answer as

to which of several procedures offer the greatest possibilities for success. When a method is decided on, then a definite outline should be prepared and the order of work determined.

Cost Data Essential

Each point to be established should be clearly indicated and the cost of the contemplated work estimated. The elements of cost with which the invstigation is concerned are, mainly, time, equipment and materials. Estimating the requirements of these for each step in executing the plan of the investigation should not entail great difficulties. The important thing is to be definite and clear about what is involved. The plan must be exact and the program undertaken with enthusiasm and followed with determination. One should be interested in what it is costing to follow a plan, if for no other reason, for the satisfaction of knowing that he has a control on the efficiency with which his mental and physical resources are expended.

The Investigator Makes the Plan

The investigator makes the plan. It should be the most important aid to his success. No board of strategy can or should plan research for him. In teamwork every member of the team should participate in making the plan. The best results should be had by cooperation and this is had fully only when the members of the team are able to feel that they work with not for one another. Good direction should foster this spirit in an organization.

Timing is Important

A problem may be worth investigating and the plan of attack may give promise of success but it may not be the proper time to undertake its investigation. Proper timing of research is of the utmost importance. It is difficult because it is dependent on several factors, not within the control of the research department. The decision what to do must rest with the department but it can be made intelligently only when the Director has evaluated all evidence bearing on the subject obtained from the several departments of the business. More failures in research are due to poor timing of investigations than to any other cause.

The concentration of effort is an important consideration in planning research. This cannot be determined by rule. The nature of the problem and the approach to its solution must be the guides. At the beginning, it may be wise to skirmish before the attack. When the way is clear the attack should be pressed with vigor until carried through to completion. The result may be negative, but the experience need not be valueless.

The Plan Serves as a Chart

No plan by itself, however good, is productive of results. It must be used wisely and followed faithfully to be helpful. It should be a guide in

the work and a means of knowing at all times its status. A plan is to the research investigator what charts, compass, sextant and chronometer are to the mariner in the direction of the course of his ship. The chart tells him where he may go and where his objective lies in relation to where he is; the compass permits of a definite course being followed and the sextant and chronometer make it possible for him to know where he is and what changes he must make in his course to reach his destination. So should a plan of research serve the investigator. It should keep him on a definite course for his objective and enable him to check his position from time to time to make sure that he should continue on this course. It may be necessary to change the direction. The important thing is to know always where you are and what you should do. A good plan makes this possible.

Investigating without a plan is like sifting sea-sand for pearls; laborious uninspiring and apt to be profitless.

New Address

Dr. Lloyd Van Doren, secretary, A.I.C., has changed his business address from 6 East 45th Street, New York, N. Y., to 30 East 40th Street, where his firm, Watson, Bristol, Johnson and Levenworth, has taken larger quarters.

Dr. Charles Allen Thomas Awarded A.I.C. Gold Medal

Dr. Charles Allen Thomas, executive vice president and technical director of Monsanto Chemical Company, St. Louis, Missouri, has been unanimously selected to receive the 1948 gold medal of The American Institute of Chemists.

The award was made in recognition of Dr. Thomas' work in the development of atomic energy, his leadership in research, particularly in synthetic resins, and his administrative ability and encouragement of basic research.

The presentation will be made at the Silver Anniversary meeting of the A.I.C., to be held at the Hotel Pennsylvania, New York, N. Y., on May 8, 1948.

Further details will appear in the February issue of THE CHEMIST.

Speakers at the meeting of the Society of Cosmetic Chemists, held in New York, December 3rd, included, Dr. Raymond E. Kirk, head of the Department of Chemistry and dean of the Graduate School of Polytechnic Institute of Brooklyn, whose subject was, "The Chemist as a Professional Man"; and Dr. E. G. McDonough, F.A.I.C., vice president of Evans Chemetics, who spoke on "The Development of Machineless Permanent Waving."

Professional Program Designed for Student Chemists

The New York Chapter of THE AMERICAN INSTITUTE OF CHEMISTS has prepared a program designed to train undergraduate students in professional attitudes. This training is not generally included in the chemists' curriculum, though lawyers and physicans receive this training as a part of their preparation for a professional career.

A Committee on Student Relations was appointed, with Karl M. Herstein as chairman. At the first meeting of the Committee, the following representatives of educational institutions were present: E. I. Becker and Raymond E. Kirk, Polytechnic Institute of Brooklyn; W. F. Ehret, New York University; L. H. Fairinholt, Columbia University; A. B. Kemper, Manhattan College; W. L. Prager, City College of New York, and J. G. Sharefkin, Brooklyn College.

Walter J. Baeza, of the Regional Employment Clearing House of the American Chemical Society, stated that, from his own experience, he found graduates in chemistry are generally unaware of their technical duties as chemists and also unaware of their future responsibilities as chemists; further, these men are unaware of the economics of their positions.

Dr. Prager pointed out that though some student counselling is done by college personnel offices, the advice given is not always of the highest caliber because the advisers are often uninformed in specific professional fields. He suggested that appropriate speakers from industry talk to student organizations. Dr. Kemper added that the various educational institutions have different needs.

Chairman Herstein summarized the proceedings:

Our objectives are that the students shall be imbued with a feeling of professional *esprit de corps*; that the students shall be made aware of position opportunities, and the related economic aspects; that a panel of speakers be arranged, and that student organizations and their advisers be contacted to arrange meetings at which members of the panel will address the group.

Dr. Gustav Egloff, F.A.I.C., has been appointed consultant in an industrial capacity to the U.S. Atomic Energy Commission.

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Problems of the Younger Chemists

C. P. Neidig, M.A.I.C.

Burrell & Neidig, 115 Broadway, New York, N. Y.

OVER the past few years I have participated in many so-called "gripe" sessions, where the younger men let off steam and advise others what is wrong with their boss or their company. In my humble opinion, the young chemists have only two problems which are, in order of importance:

(1) Insufficient information.

(2) Insufficient remuneration.

The second problem is, I believe, entirely a personal matter. The ACS and AIC have taken definite stands on minimum or starting salaries for chemists and chemical engineers with a B.S. and M.S. or a Ph.D. degree. The great majority of the companies are abiding by these suggestions so the man out of college is justifiably protected.

However, I think such mass protection should then cease and the matter of raises should correctly depend upon the individual merit of the chemist. When I was in industry, I am certain my fellow chemists were not pushing for a raise for me—why then should we waste this valuable time discussing higher salaries for a multitude of young chemists? It is for them to do as individuals, not by unions.

Besides the first problem of the younger chemist is more challenging and offers solutions which are attainable by industry. I belive that young chemists, and I include men still in college, are woefully lacking in information. Please note that I use the word information, not knowledge, because industry has no quarrel with the technical ability of the graduates.

The young men just out of college lack information about the industry they are to enter. They do not know what is expected of them by that industry. They do not know what type of work they want to do because the vast majority do not know what opportunities are open. Does the average college graduate know that the chemical industry is vastly different, depending on whether he works for a petroleum company or for a pharmaceutical company? Techniques used in the dye industry differ from those used by companies making heavy chemicals. Yet the college senior usually lacks this information.

When the young chemist or chemical engineer finally is located in industry, he usually suffers from insufficient information of another type. Unless he works for one of the few progressive companies with training courses, he has no information on the company he has joined except what he picks up from his fellow chemists. He lacks information on company history and policies, products, and competitors, raw materials, and subsidary companies. The chances are he does not even know who the president is, or the vice presidents, or what the annual sales are, or the answers to other vital or interesting questions.

Actually the young chemist can survive and even be moderately happy though he lacks information on these two aspects. However, there is one type of information he must have. If he is continually deprived of information about why a project was started or stopped, he gradually loses interest in his job and his company and only goes through the motions of being a chemist.

Fortunately all these problems of insufficient information can be solved. And I sincerely believe that they will be solved, because management is learning that it is as essential to build up morale, and to establish an *esprit de corps* in the research laboratory as in the plant. Soon the industrial relations expert will learn that the chemists are as important to him as are the unions.

Let us look into these problems more carefully and try to find the solutions.

First under consideration is the man in college who lacks information about the chemical industry. The supplying of this information must be controlled by the college. I was fortunate enough to have graduated from Penn State where the late Frank Whitmore, F.A.I.C., was in charge. In the last semester of our senior year, he philosified with us an hour a week and discussed various phases of the chemical industry. He gave us his "Ten Rules for Business Success" which are worth repeating here:

1. Like your work.
2. Learn your job well.
3. Don't worry about getting credit for what you do.
4. Learn to accept responsibility.
5. Make good friends of the right kind of people who can help you advance.
6. Broaden your interest in life. Learn how to speak.
7. Never attempt to put over sharp practices on your superiors.
8. Surround yourself with able assistants.
9. Have the courage of your convictions and carry them through.
10. Be natural in all your acts.

The reason why Dean Whitmore was so well qualified to give information on the chemical industry was that he acted as a consultant for several large companies and through these monthly visits, he was constantly kept up-to-date on industrial needs and practices. However, even a man as active as the late Dean could not keep well informed on all phases of the chemical industry.

Therefore, I would like to suggest that colleges invite men from all branches of the chemical industry to act as information bureaus for their juniors and seniors. Preferably once a week one of these men, probably from a nearby chemical company, would sit down with these undergraduates in an informal session. These men from industry should be chosen with care so that they could tell the prospective chemists of possibilities open in the chemical industry in sales, purchasing, research, production, design, packaging, technical writing, advertising, etc. The purpose of these informal talks would be to give the young chemist sufficient information on the duties and responsibilities of the aforementioned types of jobs which the young chemist can fit into. Armed with this information, a senior could handle himself much better in an interview. He would know far better what type of work he would like to go into.

These representatives from industry should also point out to the young chemist that he should affiliate himself with at least one technical society and attend as many meetings as possible—not necessarily to hear a technical paper but rather to meet his fellow chemist. The young chemist should be informed that his future depends largely on his own initiative. If he wants to get into another department he must ask his superior—the squeaking wheel still gets the most grease.

I am certain that if the colleges adopted such a program their graduates would be better informed when they went into industry. The rest of the information must be supplied by the companies themselves. Here is where management can make its contribution to developing a more loyal employee.

All too many companies spend considerable time and money hiring good chemists and then promptly forget them. Little do they realize that they are neglecting the men who, through their efforts in the plant and laboratory, may decide the future of the company twenty years later. Some companies in the chemical industry have definite training plans for their new employees, but most, according to Lauren Hitchcock in his article "Industrial Training of Chemical Engineers", in the October issue of *Chemical Engineering Progress*, adopt a "sink or swim" attitude.

A well informed employee is usually a loyal employee, full of enthu-

siasm for the company with a "do or die for dear old Rutgers" attitude. Certainly most of the young chemists fresh out of college are like this but unfortunately, they are let down hard by a disinterested management who wants none of this youthful enthusiasm, little realizing that, properly directed, it can work wonders for them.

As I look back, I realize that again I was fortunate because my first job was with Westinghouse Electric. They had a very comprehensive training program for all technical men. This program usually lasted for eight months and involved spending one to two months at different shop or office assignments to give the new employee a broad picture of the possibilities for the so-called "student". In addition each Friday for a period of fifteen weeks all men in the training school (about 300) would meet for a series of informal conferences to "acquaint graduate students with Westinghouse products, policies and personnel, and with the elements of sound business practice." The conference leaders included several vice presidents, department managers, section engineers, consultants, etc. For example, the vice president and comptroller talked on "Financial Procedures"; the assistant to the president discussed "Publicity and Advertising", and the general manager talked on "Purchases and Traffic". Discussion periods followed these talks and questions brought out additional information. The result of these all day sessions was a well informed group of young engineers who were expected to be the leaders in the future.

To be sure such a program was costly but not excessively so and the attitude of the new employees who completed the course more than repaid the money expended by the company.

The omission of certain information will do more damage to the chemist than omission of a raise in pay. Unfortunately few companies recognize this, but it is the universal complaint of ninety-nine per cent of the younger chemists. Seldom are they told why a project was started nor why it was stopped. When such things happen repeatedly the younger chemist adopts a cynical attitude and begins to believe that management has no reasons for doing anything. Soon he has lost his enthusiasm, if he had any, and either looks for another job or becomes a dissatisfied employee —a real liability to a research laboratory or plant.

When one stops to think about it, it is really so simple to give the chemist a good explanation that it is strange that it is seldom done. Perhaps the boss is too lazy or perhaps he does not want to admit a personal mistake!

Generally before a new project can be started, management must have given its approval. This was not done

on a hunch but as the result of logic based on information pro and con. Why then cannot some of this information be passed on to the chemist who is actually going to do the work? Perhaps some of it is confidental—if so, don't pass that on, but at least tell the chemist why the project was started and why he was selected to do the job.

Again when a project is stopped there must have been reasons. The chemist has as much right to know these reasons as does management, perhaps more so. How many times have some of you developed a new product or had an idea which to you was unbeatable, only to have your superior tell you the product wasn't any good—period. Or, yes the idea sounds all right, maybe we'll try it—period. After being rebuffed a few times, if you are the average chemist you probably stop suggesting. But if your superior would take five minutes, perhaps over lunch or a cigarette and tell you why the idea is not practical or why the sales department turned down your new product, the chances are you will not lose any enthusiasm and you will go back to the laboratory and try to work out answers to his objections.

Answer the chemists' question why —and management will have an aggressive laboratory. Evade the question and management has a pair of hands but no initiative or creative mind.

The younger chemists do not ask the impossible, they only want more information. Not confidential or secret information, but basic information such as is used by management in arriving at its decisions.

There are two ways to keep the younger chemist happy, contented, and productive. One is to double his salary, the other is to increase his information. Management has the choice.

Editorial Note:

Managerial secretiveness is not only ruinous to the morale of the younger chemist, but it has an equally deleterious effect on the morale of the experienced chemist, and it may directly, as well as indirectly, injure the firm that practices such disregard of good public relations within its own organization. In confirmation of this statement, please refer to page 29, to the letter captioned, "Progress Prevented by Secretiveness".

Chester G. Fisher Honored

Pittsburgh chemists honored Chester G. Fisher, president of Fisher Scientific Company and of Eimer and Amend, on December 18th, when he was presented with a placque symbolizing the Pittsburgh Award, granted annually by the Pittsburgh Section of the American Chemical Society.

Dr. E. R. Weidlein, F.A.I.C., director of Mellon Institute, toastmas-

ter, pointed out that the 1947 award was made in recognition of Mr. Fisher's contributions to chemical progress over a forty-five year period. The recipient is chairman of the local American Chemical Society section, chairman of a special committee to raise $75,000 for the Technology Department of Carnegie Library, and he has just established a $1000.00 prize for outstanding work in analytical chemistry. As president of the laboratory supply firms, he also has influenced modern laboratory work through scientific instrument, laboratory apparatus, and reagent innovations.

Dr. Alexander Silverman, F.A.I.C., head of the Chemistry Department of the University of Pittsburgh; Harry V. Churchill, chief chemist of the Aluminum Company of America; Dr. Arthur W. Gruse, administrative fellow, Mellon Institute, and Walter J. Murphy, F.A.I.C., editor, Chemical and Engineering News, each spoke on various phases of the medalist's contributions.

In acknowledging the award, Mr. Fisher delivered an illustrated lecture on his hobby, the collection of art pertaining to the alchemist and the history of chemistry.

Approximately 400,000 production workers are employed in the country's pulp, paper, and allied products industries—135,000 more than in 1939.

—Pulp and Paper Bulletin

Truesdail Laboratories Moved

Dr. Roger W. Truesdail, F.A.I.C., president, announces that the Truesdail Laboratories have moved to newly purchased buildings at North Figuera Street and West Avenue, Los Angeles, California.

Featuring consultation, research and production control in chemical, bacteriological and engineering fields, the laboratories have grown steadily since their organization in 1931. In addition to Pacific Coast service both national and international assignments are now handled. The new quarters will permit expanded personnel and a wider range of activities. Modern equipment and facilities, which include a darkroom, a microchemical laboratory, animal room, bacteriological, steam distillation and solvent extraction rooms have been installed.

Expansions have been made in the fields of air pollution and sanitary engineering to include consultation and control of noxious fumes and gases; water conservation and treatment, and the treatment and disposal of sewage and industrial wastes.

Trends
The Past is Prologue

J. N. Taylor, F.A.I.C.

IN THIS Janus-faced month of a new year, it is opportune for the chemist to take a look at the past and a glance at the future. What is his economic position as reflected in chemical and general industrial activity? What do the signs of the times portend?

Viewed in retrospect, the year 1947 was an active one characterized by high-level production and with few interruptions in employment. Although production data are not yet available for the entire year, the 1947 three-quarter period shows an upward trend in chemical output compared with the corresponding period of the previous year. Sulfuric acid, a barometer of industrial activity, has been in good supply for some time; output of soda ash, another indicator of industrial progress, is on the up-and-up.

Despite the upward trend, however, in most all chemical items, production of many chemicals is still insufficient to meet the demand. Among basic chemicals still in short supply are soda ash, caustic soda, chlorine, sodium sulfate, phenol, cresol and naphthalene. According to the "Krug Report" supplies of these will be inadequate to meet demand until well into 1948. Solid caustic soda will not be available for export until 1949. The demand-supply situation with respect to other basic chemicals such as benzene, methanol, formaldehyde, glycerine, and certain sodium salts is expected to be in balance early in 1948.

Opinion is divided as to a recession in business generally. Domestic distribution of consumer goods should, however, continue in high volume unless there is a serious drop in employment and in purchasing power. Although chemical-consuming industries are approaching a plateau in absorption of chemicals, they will continue to draw heavily upon chemical supplies.

The impact of the "Marshall Plan" upon our chemical economy remains to be seen. In the "Harriman Report" attention is called to export probabilities and the suggestion is made that chemical exports might be increased by a voluntary rationing system. Any effects upon our import trade of tariff concessions under the multi-lateral trade agreements made at the Geneva Conference and their possible repercussions upon domestic manufacture are not anticipated to be immediate ones.

The chemical outlook for 1948 is favorable. Nonetheless, the chemist would do well to keep his eagle eye upon cross currents such as labor-management relations, Government controls, foreign aid, and foreign trade that might deflect the primary trend.

Indexes[1]

Industrial Production

1935-39 Average = 100

	Adjusted for seasonal variation	
	1947 Oct.*	1946 Oct.
Total	189	182
Manufactures		
Total	195	188
Durable	222	214
Nondurable	173	168
Chemicals	247	238
Rayon	295	257
Indus. chemicals	423	402

*Preliminary

Highlights[2]

Sulfuric acid supplies met most requirements but some expansion in the industry is taking place.

Soda ash and caustic soda continue in short supply. Demand for caustic soda and chlorine has continued strong with availability of tank cars for chlorine again presenting difficulties to shippers.

The continuing high rate of output of benzene was reflected by a larger supply. The noncyclic chemicals were, on the whole, in satisfactory supply. Formaldehyde was short. Methanol improvement can be expected in the near future.

Demand for fertilizers, particularly for future delivery, continued to exceed supply. Nitrogen requirements of the sixteen countries coming under the Marshall Plan during 1947-48 are estimated at approximately 290,000 metric tons in excess of production.

As usual at this time of the year, there is relatively little activity in the insecticide market. Demand for domestic consumption is low and most manufacturers are accumulating stock piles toward next season's demand. Supplies of DDT are plentiful with both domestic consumption and export markets on the decline.

Manufacturers' sales of paint and related products during the first eight months of 1947 were considerably larger than in 1946.

Supplies of plastics' base materials improved and the industry is rapidly approaching a normal supply-demand basis. Current operations are at high levels and over-all production is pointed toward a substantially greater volume of output. Exports of plastics have been large although some decline is anticipated as a result of the dollar shortage in foreign countries.

1. Federal Reserve System.
2. November, 1947, issue, Monthly Industry Report, Chemicals and Drugs, Office of Domestic Commerce, U. S. Department of Commerce.

Abroad[2, 3]

Australia: The plant of Imperial Chemical Industries, near Sydney, resumed production the latter part of August, 1947, after a ten-month work stoppage attributed to labor difficulties.

South Africa: The byproducts plant of the South African Iron and Steel Industrial Corp., Ltd., is producing 675,000 gallons of creosote oil annually.

Italy: Montecatini has submitted to the Italian Ministry of Reconstruction plans for the rebuilding of the sulfuric-acid and superphosphate works at Pavia.

Argentina: Additional Government controls have been placed on consumption and stocks of caustic soda and soda ash.

Switzerland: The Sandoz Company plans to double its ordinary share capital.

Java: Cinchona plantations in the re-occupied areas of West Java, the center of cinchona production, reportedly suffered comparatively little damage during the recent military action. Laborers are gradually returning to their jobs and it is expected that the plantations will be able to resume production soon. Bark will be supplied to the quinine factory at Bandoeng and made available for export.

3. Foreign Commerce Weekly, Office of International Trade, U. S. Department of Commerce. (See December, 1947, number of The Chemist for detailed reference to Department of Commerce Publications.)

Japan: Production of coal-tar dyes during 1946 totaled 1,750 metric tons with an estimated output in 1947 and 1948 of 3,240 and 4,800 tons, respectively.

Spain: The chemical industry has shown marked growth and activity is at a high rate, despite the lack of certain raw materials.

France: The hydrogen-peroxide industry has increased its annual production to 2,000 metric tons, manufactured principally by the Ugine and Air Liquide companies.

Sales Organization Formed

Herbert Lorenz, president, announces the formation of the South American Minerals and Merchandise Corporation, 445 Park Avenue, New York, N. Y. The corporation will act as agent for the sale of South American ores and concentrates, and will also represent South American producers, importers, and exporters. Mr. Lorenz was formerly export manager of the Industrial Chemical Division of American Cyanamid Company.

Harry Bennett, F.A.I.C., president of Glyco Products Company, Inc., Brooklyn, N. Y., announces the development of a new ingredient for use in chewing gum to reduce its tackiness without impairing its other qualities.

METALSALTS
CORPORATION

★

Manufacturing Chemists

★

MERCURY
and
MERCURIALS

200 WAGARAW ROAD
HAWTHORNE, N. J.

Herstein Laboratories Increase Facilities

Karl M. Herstein, F.A.I.C., announces that the new laboratories of Herstein Laboratories, Inc., 128 Water Street, New York 5, N. Y., are now offering enlarged and improved facilities for industrial research and the preparation of rare chemicals for investigation and reagent uses. Complete analytical and testing services are also at hand for the use of regular clients in connection with other problems. A small reference library and a current file of information frequently proves a real time-saver by obviating the use of outside library facilities. He reports that the variety and number of calls for consulting service are steadily increasing as industrial firms realize the benefits afforded to them by consulting laboratories.

Hanson Joins Foster D. Snell, Inc.

Dr. Ernest R. Hanson, F.A.I.C., has joined the staff of Foster D. Snell, Inc., New York, N. Y., as head of research and development in the fields of plastics and rubber. He was formerly chief chemist of the Halowax Corporation, followed by seven years in the research department of the Bakelite Corporation at Bloomfield, N. J. He has been granted nine U. S. patents for his inventions in the plastics field, and he is the author of a number of scientific papers on organic chemistry.

The Question

Looking back over twenty-five years, what advice would you give to young chemists who are starting out today?

(Asked of members who joined the A.I.C. in 1923, our founding year.)

The Answers

By Williams S. Arnold, Director of Research and Production, The C. M. Pitt and Sons Company, Baltimore 30, Maryland:

"They should join *The American Institute of Chemists* and maintain its Code of Ethics; also The American Chemical Society and participate actively in both."

By Roy C. Charron, Director of Laboratory, United States Envelope Company, 84 Prescott Street, Worcester, Mass.:

"This is a problem. It's hard to tell the youngsters anything today."

By Dr. James F. Couch, Senior Chemist, Eastern Regional Research Laboratory, U. S. Department of Agriculture, Wyndmoor, Philadelphia 18, Penna.:

"Find out in what direction your talents lie and then develop them to the utmost. Be interested in everything pertaining to your field, learn all you can about it. Be active in your professional and scientific societies and do not neglect community organizations such as Rotary and Kiwanis. These are very broadening."

—U.S.D.A. Photo

Dr. J. F. Couch

By Dr. Syemour M. Hermann, Retired President and Director of Chemical Research, Apex Chemical Company, New York, N. Y.:

"Chemists today have more ego than we had twenty-five years ago. Chemists should be compelled to take a regent's examination the same as in law and medicine. Every high school boy is a chemist and can enter a chemical factory with very little knowledge of chemistry. In Europe things

—Brown Bros.

E. Dowzard

are quite different. A chemist is honored and respected. In this country he is regarded too often as a workman, on the same footing as a coal shoveler. I have known chemists who were getting a salary of $15.00 a week, who had graduated with a B. S. in chemistry from Columbia College and M.I.T., because they could not get more." (To overcome this) "the Government should make the graduate chemist take an examination as to fitness and legalize him."

By Edwin Dowzard, Retired Director of Research, New York Quinine and Chemical Works, Inc., Brooklyn, N. Y.:

"Obtain a position in a small, well-managed business employing six to twelve in the control department and up to twelve in the research department. Young chemists with ability and energy will be more noticeable than in large organizations employing hundreds of chemists."

By Ernest G. Jarvis, President, Continental United Industries Company, Inc., New York, N. Y.:

—Fabian Bachrach

E. G. Jarvis

"Keep plugging along and watch out for every new opportunity."

The Ethics of the Research Worker

Louis Elsberg Wise

The Institute of Paper Chemistry

(*Reprinted by Courtesy of The Paper Industry and Paper World*).

THE question once arose as to what professor at Columbia University had had the greatest influence on my life. Naturally a number of great names came to mind. Charles Frederick Chandler, Marston Taylor Bogert, both great chemists and teachers, Cassius Keyser, an eminent mathematician, Charles Beard, the historian, and a number of others. All of these men had been my teachers. I had met them in the class room, the laboratory or the lecture hall, and all of them had left their impress.

But strangely enough, the man who influenced me most was one whom I had never even seen at Columbia. In fact I saw him only once or twice in my entire life, and I attended none of his lectures. However, later, I read many of his lectures and his essays, which helped me to crystallize my own ideas because of the clarity with which his ideas were expressed. Who was this man? His name was Felix Adler. He was professor of political and social ethics at Columbia University. The fact that I hardly knew Professor Adler seemed unimportant. His personality and idealism could be sensed in each of his publications, and I followed with interest all of his great civic contributions that showed how completely he was putting his ideals into practice.

Many years after leaving college, my old friend Dr. Emmet Reid, of Johns Hopkins University, outlined a book entitled *Introduction to Organic Research*. He sent this outline to a number of chemists, including myself, and asked for suggestions. I noted one omission. Nothing had been said about the ethical side of research. Dr. Reid immediately asked me to write a brief section on this subject for his book and this I did (2). As I look back after twenty-three years and reread this section, my limitations in this field become all too apparent. True I emphasized the personal integrity of the research worker, but placed no emphasis on his social responsibilities—and so I side-stepped issues which appear very important to me today.

Ethics Defined

What do we mean by the term "Ethics"? Professors of philosophy speak of ethics as a systematic study

of the ultimate problems of human conduct. (*1*). The term ethics comes from the Greek — either from the word denoting *character* or the word meaning *custom*. It has to do with the morals of the human race.

Of course, such conduct may be studied from various points of view. It can be observed externally and objectively, just the way the behavior of the lower animals is studied. (This would place it within the field of behaviorism and biology.)

It may be studied in relationship to the mental processes involved in such conduct. (This would put it in the field of psychology.)

It may be studied in its relationship to the social and physical environment in which man lives (in the range of anthropology and sociology).

All of these studies have their value and their importance to ethics.

As I understood it, the problem of ethics is entirely different. Ethics is concerned not with the bare facts of human conduct, but with certain intangibles—with values, and with estimates and potentialities.

One cannot measure ethics by means of instruments or mathematical derivations. Nor can one draw neatly tabulated data or pretty graphs. As practical an industrial scientist as Irving Langmuir (3) says "... even the scientific analysis of the principle of ethics has not proved particularly fruitful ... Let us not restrict (ourselves) by trying to regulate our lives solely by science and by reason." In other words, ethics is not a positive, objective science. It deals not with *actual* human conduct, but with its *ideal*. It has to do with human conduct not as it *is*, but as it *should* be. Moral values, gathered over the centuries, play an important role in ethics.

The ideal view is taken that human beings are capable of rising above time-honored prejudices, ingrained case-hardened custom, and of reaching a plane which transcends the limitations of human beings as we know them today. Pessimists will tell you that all this is unrealistic wishful thinking. That is a point of view to which I cannot subscribe.

Naturally philosophers who are interested in ethics cannot always agree on what these ideals should be. They may meet on common ground for a short time — but eventually their viewpoints will differ. Often traditional morality is accepted. Not infrequently its validity is questioned. When the questioning is tinctured with a philosophy of material nationalism (as in the case of Nazi Germany), the results are devastating. I want to discuss what I hope is an acceptable ethical position for the individual research worker, or, for that matter, for any man doing creative work in any form. Most of this seems self-evident and elementary.

Truth and Research

(1) A research worker must at all times seek the truth, and his honesty must be above suspicion. Attempts to defraud are naturally outlawed.

Due Credit

(2) He must give due credit to his co-workers, and his colleagues for any share that they may have had in the work. He must be punctilious in giving proper acknowledgment to previous investigators in the same field—to those men who have blazed the trail.

Tolerance

(3) He should free himself from pettiness. If his own prior work has been overlooked, he should view such neglect charitably, with good humor and without cynicism. Often this lack of recognition is due to carelessness rather than to deliberate, planned neglect. As a corollary to this, the research worker should not permit himself to become embittered or involved in useless polemics. This does not mean that he should not take issue with a misinterpretation of data or with the mistakes of other investigators. It simply means that his criticisms must be objective, and that they must not descend to the plane of personalities. He must show that he is dealing with a set of data, not with an enemy.

In 1927, I was in Berlin, and within this area lived three chemists eminent in the field of cellulose. They were Hans Pringsheim, professor at the University of Berlin; Kurt Hess, director of the Kaiser-Wilhelm Institute fur Chemie, and R. O. Herzog, head of the Kaiser-Wilhelm Institute fur Faserstoffchemie. I liked them all, but I found that Pringsheim and Hess were not on speaking terms. Hess and Herzog never greeted each other, and Hess and Pringsheim were certainly not friendly. Their scientific disagreements had led to bitter feuds, and none of them had the sense of humor to break the deadlock of these animosities. I sensed this rankling hostility when I visited each chemist in turn, and I was chilled by it.

So my contention is that the research worker must be willing to take constructive criticism and vigorous disagreement without enmity and without hypersensitiveness.

Collaboration

(4) The research worker must stand ready to help others with advice and with materials. His true objective is not to further his own progress but that of science. Therefore, he should be willing to co-operate whenever possible, and help should be given unstintingly. Human relationships are important in modern scientific research, and mutual trust and exchange of ideas are essential. There are times when such frankness leads to disappointment and to disillusionment—but the scientist who lives as a recluse, or who constantly fears that someone will "steal" his brain

children is a sorry creature, who fails to get the maximum enjoyment out of his work.

Self-Criticism

(5) It goes without saying that a research worker must exercise the greatest critique toward his own work. Not infrequently working hypotheses are accepted as facts, and when experimental data do not agree with the hypothesis, the uncritical worker becomes a victim of his *a priori* judgments. The hypothesis rides the man — and sometimes it serves to embarrass him. Any working hypothesis should be discarded when it no longer acounts for carefully weighed experimental data. Many of the principles that I have outlined are self-evident, and yet they are overlooked by some able scientists, whose influence and reputations would have been enhanced if they had lived up to them.

I have a number of examples of ethical and unethical conduct—but I will cite only two incidents to illustrate some of the points mentioned above. The first is very obviously an example of unethical behavior. The second shows a different picture.

Episode "A"

A professor submitted a manuscript to a colleague interested in the same field of organic chemistry. The professor asked for a critical evaluation of his work, which the colleague gave to the best of his ability and without reservations. In the letter, conveying these criticisms to the professor, the colleague stated that there was still one phase of the work which required reinvestigation and extension and which he, the colleague, hoped to undertake at the earliest opportunity (presumably the following summer). The colleague showed how the results of such a study would have a real bearing on the conclusions reached in the professor's article. The professor acknowledged his colleague's criticism but said nothing about the colleague's proposed work. A few months later, however, at a scientific meeting the colleague was surprised by a report given by the professor on the very problem that had been outlined in the colleague's letter.

A possible (and charitable) interpretation of the episode is that the professor thought of the same problem and had actually begun the work before the receipt of his colleague's letter. Under the circumstances it behooved the professor to notify the colleague immediately that the work was already in progress in the professor's laboratory. A less charitable interpretation, however, puts the professor in a far uglier position. The colleague's letter may have actually *suggested* to the professor the importance of the reinvestigation, in which case the professor deliberately stole the colleague's idea. Under any circumstances the professor's methods were entirely unethical and deserve the fullest condemnation.

Episode "B"

The other instance is in striking contrast to the preceding one. Two investigators were engaged in a piece of research in a government laboratory. Incidentally they learned that two other investigators, while working on a broader problem, had covered a part of their own field. This information led to a friendly correspondence which indicated that the work of the latter investigators had progressed farther than that of the former investigators. The latter investigators, therefore, withheld publication of their own results until the others could publish a preliminary report of their own work, thus giving them priority. Subsequently the former investigators published an article confirming the latter investigators' results.

The conduct of the government chemists in the matter requires little comment. They allowed the results of their colleagues to be published before their own because they recognized not only a valid claim to priority, but because they felt that the other investigators had a better grasp of the subject than they had themselves. They realized that the chemical literature would gain by a presentation of the results at the hands of the other investigators, rather than at their own.

In case of doubt, when an ethical question arises, the investigator must remember that he must resort to what he considers *right, not expedient acts.* He must take a *detached* view of the situation and ask himself—"What course of action will be the *right* one, *irrespective of its effect on me, personally?*"

• • •

(1) Wolf, Abraham, *Encyclopedia Brittanica,* 14th ed. Vo. 8. pp. 757-61.
(2) Reid, E. E., *Introduction to Organic Research.* pp. 12-14, D. Van Nostrand (1924).
(3) Langmuir, Irving, *Science* 97, 1 (1943).

NOTE:

Space does not permit reprinting of the second half of this paper which treats of the social responsibilities of scientists. Readers are referred to the complete paper in the Dec., 1946, issue of *The Paper Industry and Paper World.*

Lawrence H. Flett, F.A.I.C., director, New Products Division, National Aniline Division, Allied Chemical and Dye Corporation, New York, N. Y., spoke December 8th on "Professionalization of the Chemist" at Ohio State University, Columbus, Ohio, to seniors and graduate students in chemistry.

Birth

Born, November 19th, a son, Bal, to Mr. and Mrs. M. R. Bhagwat of Niagara Falls, N. Y. Mr. Bhagwat, F.A.I.C., is with Mathieson Alkali Works, Inc.

Necrology

C. Ellwood Hayes

C. Ellwood Hayes, chemist, Turco Products Company, Altadena, California, died August 29, 1947, at the age of thirty-three.

He was born in Philadelphia, where he received the B. S. degree from the Philadelphia College of Pharmacy and Science; attended lecture courses at the University of Pennsylvania, and took advanced organic work at Temple University.

From 1937 to 1940, he served as analytical chemist for John B. Stetson Company, then becoming senior analytical chemist for Charles Lennig Company. In 1945, for reasons of health, he moved to California. He was rated as an exceptionally able chemist of much future promise.

He became a member of *The American Institute of Chemists* in 1943, and was actively associated with the Pennsylvania Chapter.

Lester Kirschbraun

Lester Kirschbraun, vice president in charge of research at the Flintkote Company, Rutherford, N. J., died September 9, 1947, at the age of sixty-four.

He was born in San Francisco, California. He attended the University of Michigan where he received the B.S. and Ch. E. degrees. His first position was with the Union Pacific Railroad at Omaha, Nebraska. In 1905, he joined the engineering department of the City of Omaha, and then, two years later, took a similar position with the City of Chicago. From 1910 to 1918, he maintained a consulting practice in Chicago. In the latter year, he joined the Flintkote Company. He held over one-hundred patents in the field of bituminous emulsions, rubber dispersions, and roofing materials.

He belonged to the American Society for Testing Materials, the American Chemical Society, the Technical Association of the Pulp and Paper Industry, the Association of Asphalt Technologists, and the Society of Chemical Industry.

He became a Fellow of *The American Institute of Chemists in* 1937.

Graduate Seminars

The Graduate Chemical Society of Brooklyn College is sponsoring two graduate student seminars, one on organic chemistry, organized by Dr. Irving Allen Kaye, and the other on physical and inorganic chemistry, organized by Dr. Robert Ginell. They meet alternately on Friday evenings. Brooklyn College Alumni are invited to attend. Meeting notices may be obtained from the society at Brooklyn College, Bedford Avenue and Avenue H, Brooklyn, N. Y.

Comment

Progress Prevented by Secretiveness

To The Editor:

Despite the trouble my company had in maintaining a practical level of yield of a certain product, there seemed to be no integrated attack on the problem. I was assured that they were working on it, but where the plan of attack and the progress on plant research is kept from the people in the plant, no real progress can be expected. For example, a simple observation made by an operator may be more valuable than months of research. When I heard that the secret of getting the desired yield consisted of a certain procedure, I passed this information on to the research department. This department never showed any interest whatever in the statement. I know that the suggestion might not have been worthwhile, but I hold that the proper approach is for a research department to seize on anything, and, by all means, to report back that it has looked into the matter and has the facts which show whether or not there is any thing to the idea.

At another time, I made some suggestions about controlling the crystal size of a product. This time I followed it up myself by careful inquiry, and I got the response, "It can't be done." I had expected such a reply. Eighteen years before, I had gone through the same thing on this matter of controlling crystal size, and it is amazing how strongly people hold on to their misconception. However at that time, I was able to demonstrate the method. In the case of this recent product, I could not show them how, although I might have, had they given me the facilities. Despite the fact that I sent them all the basic facts governing the problem and its solution, they made no further inquiry of any kind, though this time they did acknowledge receipt of the information.

Now the point I wish to make here is the faulty approach to research, not that I was right. I might well be wrong, but similarly it was proven that a steamship could not cross the Atlantic, a bumblebee could not fly, electric power could not be transmitted more than a few yards, and so on, Incidentally, another company has just received a patent covering the crystallization of that product.

——From a Fellow of the A.I.C.

The Stuff of Dreams

To The Editor:

Fantastic as his ideas may have seemed at the time, consider how Science has outstripped Jules Verne's unfettered imagination! Think of the submarine and his 20,000 leagues under the sea . . . the airplane, and

his voyage around the world in eighty days. Not a half-century has passed since he died, but every child knows how far behind actual facts are his creations of scientific romance. Let us say, as a tribute to his art, that his imagination has stimulated scientific research and advancement, remindful of what James Harvey Robinson has said: "The truest and most profound observations on intelligence have in the past made by the poets, and in recent times, by story-writers." And did not the great August Kekule, referring to chemical problems, state: "Let us learn to dream, gentlemen, then perhaps we shall find the truth . . ." But, of course, scientific work must then follow for the verification of the dreams.

Thus may we not be allowed to do a bit of dreaming about the fission of the atom! When we know of compounds that are produced in the animal and plant body which our laboratories cannot produce, at least not under the conditions prevailing in living organisms, may we not dream of peculiar emanations, radiations, here at work which fissure and shatter not only the molecule, which our routine chemists can do, but the atom itself, from our food and intake, into subatomic and nuclear infinitesimals, which minutiae, now set free, can readily unite into the complex compounds of animal and plant organisms! Could one dream of a physiological cyclotron, radiations of that old "Vis Vitalis" (if you will), comparable in effects to our modern resonance accelerators? Thus may not the ordinary oxygen of the air, essence of living organisms, be "activated", fissured by "living radiation" before it can kindle the flame of life? If this seems incongruous and far-fetched let me refer to the great industrialist, Mr. Willard H. Dow, who says: "We must have freedom of thought even to the extent of the courage to be a bit crazy."

—Dr. N. Sulzberger, F.A.I.C.

Suggestions Are Welcome

To The A.I.C.:

As for THE CHEMIST, I personally, and for a long time, have wished it could be of a type worth-while preserving. For the contents in its present get-up, I believe very few save their copies, since these have absolutely nothing in the way of appeal for the *practical* chemist. I believe we should poll the entire membership to ascertain their ideas, and submit suggestions to improve it in its practical value for the average chemist.

——Simon Mendelsohn, F.A.I.C.

Dinner Without Dessert

To the Editor:

I wish great things for the advancement of THE CHEMIST. It is a splendid little magazine giving informative articles and giving attention to the principles and idealogy,

the important and basic matters, of this chemical world and of our chemical society.

But now, if we could only top it off with a tasty dessert! The mortar which holds the important structure together: One cartoon per month, an occasional bit of humor in each issue, someone's human interest angle as contained in one page per month—the reaching out of the professional to the rest of his society whom he serves. After we give all the good material as we have done, then translate it! Dress it up for action and put it to use with layman comment and prepare it for use. Serve it in such a way that someone cannot help doing something about, cannot help applying the knowledge THE CHEMIST gives.

I guess I've talked too much. You run the magazine and I'll go back tomorrow morning to running my laboratory.

—John R. Albert, M.A.I.C.

An Honor

To The A.I.C.:

I am in receipt of a certificate of Life membership as a fellow of the A.I.C. I regard this as one of the best honors that have been granted to me. I assure you that I will continue to live up to the code of ethics of the Institute.

—Herman S. Lythgoe, F.A.I.C.

Slayter Awarded I. R. I. Medal

Games Slayter, vice president in charge of research and development of Owens-Corning Fiberglass Corporation, has been chosen to receive the 1948 Industrial Research Institute medal for his leadership in the development of glass fibers and their commercial application. The medal will be presented February 5th during the winter meeting of the Institute at Rye, New York.

Illinois Institute of Technology

The $15,000,000 development and expansion program of Illinois Institute of Technology will transform 100 acres from 31st and 34th Streets, Michigan Avenue to the New York Central Tracks, Chicago, into a modern college campus and residential area for 10,000 persons. The Institute was formed in 1940 through a merger of Armour Institute of Technology and Lewis Institute.

Addresses Wanted

The following members of *The American Institute of Chemists* are listed as "Addresses Missing." It will be appreciated, if anyone who knows the present addresses of any of these members will forward them to the AIC at 60 East 42nd Street, New York 17, N. Y.

Eleanor G. Anderson, A. A. I. C.
Formerly in WAC.

Themis Askounis, A. A. I. C.
Former address: Northwestern University, Chicago, Ill.

L. D. Barrick, F. A. I. C.
Former address: 1314 Austin Street, Denton, Texas.

John J. Craig, A. A. I. C.
Formerly in Armed Service.

William H. Dargan, F. A. I. C.
Former Address: Major, A. C. Air Service Command, Patterson Field Fairfield, Ohio.

Fred F. Diwoky, F. A. I. C.
Former address: Captain, Chemical Warfare Service, W. Roxbury, Mass.

Bernard S. Friedman, F. A. I. C.
Former Address: 2326 S. 21st St., Philadelphia, Penna.

Abraham Goldin, A. A. I. C.
Former Address: Sergeant, Barracks Area, SED, Oak Ridge, Tenn.

William W. Hawes, F. A. I. C.
Former Address: Lt. Commander, U.S.N.R., U.S.S. Mobile, (CL-63).

Kahn, Gloria C., A. A. I. C.
Former Address: 2401 Jackson St., San Francisco 15, Calif.

Kupersmith, Irving A., F. A. I. C.
Former Address: Paseo de la Reforma 380, Mexico, D. F., Mexico.

Eli Rantzman, A. A. I. C.
Former Address: 108 Field Place, New York 53, N. Y.

John Ross, F.A.I.C.
Former Address: Colgate Palmolive-Peet Co., Jersey City, N. J.

Robert V. Seaman, A. A. I. C.
Former Address: Heckethorn Mfg. and Supply Co., Littleton, Colo.

John F. Williams
Former Address: Chief Division of Laboratories, Bureau of Customs, Washington 25, D. C.

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December Meeting

The 242nd meeting of the National Council was held December 16, 1947, at The Chemists' Club, New York, N. Y., with president Foster D. Snell presiding. The following officers and councilors were present: H. L. Fisher, L. H. Flett, F. A. Hessel, D. B. Keyes, R. E. Kirk, J. J. Mattiello, J. J. Miskel, E. H. Northey, G. L. Royer, N. A. Shepard, F. D. Snell, L. Van Doren, and L. T. Work. K. M. Herstein, V. K. Kimball and C. P. Neidig were present.

The minutes of the previous meeting were accepted. The Secretary announced that the membership now totals 2,133, an all-time high.

The Secretary reported that the membership was responding well to

the request for suggested potential members and associates, a total of 662 names having been sent in within the past three weeks, with other names being received daily. Dr. Snell is sending a letter to new members as they are elected, asking them to cooperate by suggesting those whom they know who would be interested in membership.

The treasurer's report was accepted.

The Secretary announced that of those who joined the A.I.C., in 1923, our founding year, ninety-nine of them are still active in the Institute. The suggestion that these members receive a memento in recognition of their many years of service was accepted. Details are to be worked out by an appropriate committee.

A report of the Committee to Review Insignia, Emblem, Stationery, etc., was presented. A motion was passed to ask the Secretary's office to obtain suggestions from people in the appropriate field for improvement of these visual evidences of the Institute.

Dr Mattiello reported as chairman of the Committee on Annual Meeting Arrangements. The annual meeting will be held at the Hotel Pennsylvania, NewYork, N. Y., on May 8th. Registration, business, and afternoon meetings will be held in the Salle Moderne, with the reception in the Ballroom Foyer, and the banquet in the Ballroom.

A special Silver Anniversary Committee will include the chairmen of all the Chapters. The souvenir program will contain a history of the Institute, a history of the various chapters, a list of the founders, medalists, past presidents, etc.

The situation of the Municipal chemists of New York was discussed and the Association of Municipal Chemists was requested to furnish data concerned with salaries of chemists in other municipalities, as well as salaries of other employees of the City, for comparative purposes.

The Jury on Medal Award reported that Charles Allen Thomas, vice president in charge of research and development of Monsanto Chemical Company, had been selected to receive the 1948 Gold Medal of the Institute.

The following new members were elected:

Fellows

Bernstein, Isidor Mayer
Director, National Printing Ink Research Institute, Lehigh University, Bethlehem, Pennsylvania.

Burdick, Everette M.
Director of Research, Texsun Citrus Exchange, Weslaco, Texas.

Golden, Milton J.
Biochemist and Bacteriologist, McKesson and Robbins, Bridgeport, Conn.

Nanz, Robert A.
Biochemist (*Food and Nutrition*), Foster D. Snell, Inc., 29 West 15th Street, New York 11, N. Y.

Reich, Irving
Research Director, Foster D. Snell, 29 W. 15th Street, New York 11, N. Y.

Rishell, Carl A.
Director of Research, Timber Engineering Company and National Timber Manufacturers' Association, 1319 18th Street, N. W., Washington, D. C.

Sandifer, John S.
In charge of Research Laboratory, Swift and Company, P.O. Box 549, Fort Worth 1, Texas.

Schulhoff, Henry B.
Sanitation Engineer, First Army Hqs., Office of the Engineer, Governors Island, New York 4, N.Y.

Stallcup, W. David
Assistant General Manager, Glidden Company, Naval Stores Division, P. O. Box 389, Jacksonville 1, Florida.

Turner, A. Willard
Vice President, Forbes Laboratories, Inc., Elgin, Illinois.

Members

Blacketer, Charles W.
Chief Chemist, Berry Brothers Company, 211 Leib Street, Detroit 7, Michigan.

Cole, Leland G.
Senior Research Engineer, California Institute of Technology, Jet Propulsion Laboratory, Pasadena, California.

Dubowski, Kurt M.
Graduate Student and Assistant, Department of Chemical Engineering, The Ohio State University, Columbus 10, Ohio.

Frischmuth, Robert W.
Technical Director, Cosma Laboratories, 1545 E. 18th Street, Cleveland 14, Ohio.

Hanna, Delbert
Research Chemist (Junior Chemist), Solvay Process Company, Syracuse, N. Y.

McKaba, William
Chemist, Nopco Chemical Company, Harrison, New Jersey.

Merzbacher ,Claude F.
Instructor in Chemistry, San Diego State College, San Diego, Calif.

Associate

McIntyre, Frank J.
Director, The Columbus Water and Chemical Testing Laboratory, 580 Olentangy Street, Columbus 2, Ohio.

Reinstated to Fellow Membership

Theel, Percival
Professor and Head, Department of Chemistry and Dyeing, Philadelphia, Penna.

Wisdom, Roy H.
Plant Manager, Chemical Engineer, Taylor White Extracting Company, Camden, New Jersey.

There being no further business, adjournment was taken.

National Council Meetings

Council meetings of The American Institute of Chemists will be held at The Chemists' Club, 52 East 41st Street, New York, N. Y., on the following dates:

January 13th

February 10th

March 16th

April 13th

Chapters

Chicago

Chairman, Edward L. Gordy
Vice chairman, J. Bowman
Secretary-Treasurer,
Mary L. Alexander
Universal Oil Products Company
310 South Michigan Street
Chicago 4, Illinois
Council Representative,
Martin de Simo
Reporter to The Chemist
Madge M. Spiegler

Meeting Dates
Chicago Chapter
February 13, 1948
April 2, 1948
May 14, 1948

"What Does Management Expect of the Chemist? What Does the Chemist Expect of His Job?" was the topic for discussion when the Chicago Chapter met on December 12th. A panel of three speakers introduced the subject: R. K. Summerbell, Northwestern University; A. B. Cramer, F & F Laboratories; R. F. Baldaste, Standard Oil Company (Indiana).

Following this introduction, the meeting was opened for a general discussion in which the audience took a lively part. A short mixer preceding the dinner provided an opportunity for all to renew friendships and to meet the speakers of the evening.

The program for February 13th will feature a panel discussion on "What Kind of a Chemist Makes a Research Director?" and the professional training required to shape a man for chemical management. Speakers will be: Dr. H. E. Robinson, assistant director of research, Swift and Company, Chicago; Dr. George S. Speer, director, Institute for Psychological Services, Illinois Institute of Technology, Chicago, and George Gelman, technical director, Quartermaster Food and Container Institute for the Armed Forces, Chicago.

Dr. A. C. Zettlemoyer, F.A.I.C., associate professor of Lehigh University, spoke October 17th, before the Lehigh Valley Section of the American Chemical Society on "Absorption as a Research Tool."

Washington

President, Dr. Eduard Farber
Vice-chairman, Royal E. Rostenbach
Secretary, Elizabeth M. Hewston
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Washington 7, D. C.
Treasurer, Hyman I. Feinstein

January 30th Meeting

"Lives and Jobs of Chemists in France", by Robert S. Aries, Professor, Polytechnic Institute of Brooklyn. Meeting at the Woodley Apartments, 1851 Columbia Road, N. W., Washington, D. C. Time: 7:45 p.m. in downstairs lecture room. Those interested are invited.

February 27th Meeting

"Chemical Mysteries of Polarized Light," by Dr. Charles Proffer Saylor, chemical microscopist at the National Bureau of Standards. Meeting in Room 142, Materials Testing Laboratory of the National Bureau of Standards, Reno Road and Van Ness Street, N. W., Washington, D. C. Those interested are invited.

Speakers Offered

The Speaker's Bureau of the Chicago Section of the Institute of Food Technologists, 29 S. LaSalle Street, Chicago, Ill., offers speakers, without charge to organizations within the Chicago area, on subjects, of popular or scientific appeal, concerned with foods.

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Calcium and Phosphorus in Foods and Nutrition

By Prof. Henry C. Sherman, *Columbia University Press*. 1947. 293 pp. 5½"x9". $2.75.

Forty-five pages of selected references are gathered from the most important publications on the subject of calcium and phosphorus, but also related minerals, from the beginning of our century through 1948. Almost every phase of human and animal nutrition has been included in the list of readings. The subject and author index covers 11 ½ pages.

This volume is an important contribution to the science of nutrition. It begins with a comparison of the elementary composition of the body and its environment, and illustrates the importance of calcium and phosphorus in the human body, and thus in the food. Cogent summaries of a vast amount of investigation on the effects of food on growth are illustrated by figures and tables.

A chapter on phosphorus gives its nutritional function in the body, in the metabolism of bones and teeth, experimental studies on phosphorus deficiency, and organic combinations and linkages and their function in nutrition. Under quantitative needs, the author discusses experimental evidence for necessary requirements and optimal calcium and phosphorus intakes of infants and children, and differing views as to the C/P ratios growth. Vitamin D and calcium and phosphorus metabolism of infants under different conditions of health and growth is given. Rickets and other calcium-deficiency diseases are discussed through experimental and clinical evidence.

The final chapter summarizes the newer knowledge of nutrition, and states that there is a vast difference between merely adequate and the optimal in nutrition; health is not merely an absence of disease, but a positive quality of life which can be built to higher levels. Extra green vegetables and milk are recommended for the normal, optimal diet. The book ends with a plea for economy in the use of our natural food resources in keeping with our better understanding of the science of nutrition.

—Ora Blanche Burright, F.A.I.C.

The Terpenes

By J. L. Simonsen. Second edition revised and reset. Volume I, the Simpler Acyclic and Monocyclic Terpenes and their Derivatives. Cambridge University Press. 479 pp. Price $6.50.

This is a revised and enlarged edition of Volume I of this authoritative work on the chemistry of the terpenes. The book was first published in 1931, and recent develop-

ments, as well as increasing importance of the subject matter, justified the revision.

The first volume has remained the same in plan and scope covering the simpler acyclic terpenes and their derivatives (hydrocarbons), alcohols, aldehydes, ketones, and cyclogeraniolenes and the monocyclic terpenes and derivatives (hydrocarbons, alcohols, aldehydes, ketones and oxides).

The reviewer would like to point out, however, that the book is strictly limited to the discussion and treatments of naturally occurring terpenes. In other words, while synthetic methods of preparation of these terpenes are discussed, no terpenes are included which are purely synthetic and do not occur in nature.

A revised and enlarged edition of the second volume dealing with dicyclic terpenes and sesquiterpenes is in preparation. A useful author and subject index is included.

—William H. Van Delden, F.A.I.C.

Booklets

"Daintex", leaflet describing liquid wetting-out agent and penetrant manufactured by Hercules Powder Company, Wilmington, Deleware.

"Dyes and Dyeing", a catalog of translations of I. G. Farben patents. Available from Research Information Service, 509 Fifth Avenue, New York 17, N. Y.

"New Honeywell Psychrometer". Descriptive material covering new electric humidity measuring device. Available from Mr. Kingsland, Minneapolis-Honeywell Regulator Company, 2753-4th Avenue, Minneapolis, Minn.

"New Pyro Radiation Pyrometer". Information and catalog sent on request to Paul V. Bollerman, The Pyrometer Instrument Company, 103 Lafayette Street, New York, N. Y.

"Catalog. Essential Oils, Balsams, Oleoresins, Concentrated Flavors & Basic Perfume Materials." Magnus, Mabee & Reynard, Inc., 16 Desbrosses Street, New York 13, N. Y.

"Food and Nutrition Studies". Leaflet describing services offered by Foster D. Snell, Inc., 29 West 15th Street, New York 11, N. Y.

"Clorafin", booklet on chlorinated paraffin and its uses in flame-proof and weather-proof textile coatings, as plasticizer for vinyl plastics, etc. Available from Hercules Powder Company, Wilmington, Delaware.

Guernet Model Variable Speed Motor. Description of new model, 1/5 h.p. motor designed to maintain constant maximum torque. Guernet Electrical Machinery, Inc., Box 196, Meriden, Conn.

"Planning of Research and Development Work," a statement of the experience of Wallace Clark and Company, consulting management engineers, 521 Fifth Avenue, New York 17, N. Y. Also available on request from this firm are: "Executive Planning, the Balancing of Sales, Production, Overhead and Finances"; "Methods to Free Creative Brains in Industry;" "Management Engineering in Industrial Research Laboratories", and "Consulting Management Services."

Survey of the Middle East

"The Middle East". Book on Aden, Afghanistan, Anglo-Egyptian Sudan, Cyprus, Egypt, Iran, Iraq, the Lebanon, Palestine, Saudi Arabia, Syria, Transjordan, Turkey, and the League of Arab States. It includes data on agriculture, oil, minerals, industy, exports, and imports, and outstanding persons there. 400 pp. 8″ x 10″. Maps and illustrations. Price 2 pounds, 10 shillings. Order from Europa Publications, Ltd., 39 Bedford Square, London W. C. 1, England.

Robert J. Milano, head, Millmaster Chemical Company, who has just completed an air trip to industrial centers, reports that the prospects for chemical industry in 1948 are excellent. On the West Coast he found industrial activity at unprecedented levels.

Opportunities

Fellowships Available

The National Research Council is offering fellowships for advanced study and research in the natural sciences, for the academic year 1948-49. These Fellowships are announced under a series of programs financed from various sources, but administered by the National Research Council. They are offered to graduate students in physical and mathematical sciences, geology, geography, biological and agricultural sciences, anthropology and psychology, with stipends of $2,500 per annum. Information may be obtained from the National Research Council Fellowship Office, 2101 Constitution Avenue, N. W., Washington 25, D. C.

Assistantships Available

The Illinois Institute of Technology, Technology Center, Chicago 16, Illinois, announces that twelve assistantships, four in teaching and eight in research, are available for the second semester in the department of chemistry. Halftime teaching assistantships require twelve hours and permit nine credits of graduate work each semester. Stipends are $1,275 for two semesters. Twenty-four similar halftime teaching assistantships and twelve research assistantships will be available in September, 1948. Applicants should write to Martin Kilpatrick, head of the department of chemistry.

Patent Advisers Wanted

The U. S. Civil Service Commission announces examination for probational appointment to the positions of Patent Adviser, P-2 through P-6, $3,397 to $7,102 a year. Options include chemistry, chemical engineering, and physics. To apply, request Application Form 57 and Card Form 5001-ABC from first-or second-class post offices, or from Executive Secretary, Board of U. S. Civil Service Examiners, Post Headquarters, Fort Monmouth,N. J., or from the Director, Second U. S. Civil Service Region, Federal Building, Christopher Street, New York 14, N. Y. Forms should be filled out completely, and sent to the Executive Secretary, Board of U. S. Civil Service Examiners, Fort Monmouth, N. J.

Chemists and Physicists Needed

The Quartermaster Research and Development Branch of the Army is seeking chemists and physicists for its various sections. In particular men and women with doctorates are sought for the fundamental chemistry and physics laboratories to engage in research of a basic nature in the fields of plastics, rubber, textiles, food and chemicals. Positions are located in Washington, D.C., Philadelphia, Boston, and Chicago. Salaries range from $4150.00 to $10,000.00 depending on education and specialized qualifications. Interested persons should contact the Director, Chemistry Laboratories, Philadelphia Quartermaster Depot, 2800 South 20th Street, Philadelphia 45, Pa.

Chemists Available

Chemical Engineer. P. E. Experienced in pilot plant design and operation, fine and heavy chemicals. Coordination of development work to plant problems as assistant to general manager. Skilled in reporting results of investigations of economy studies and process analyses. Please reply to Box 10, THE CHEMIST.

Research Manager, Director, F.A.I.C., Experienced in netting, twines, cordage, preservatives and equipment used in the fishing industry, including market development. Worked during war as Marine Technologist with the War Production Board on cordage and fiber problems. Publications, research, sales. Please reply to Box 12, THE CHEMIST.

Dr. Gustav Egloff recommends for professional reading:

"The Training of Research Engineers", by J. R. Van Pelt, Battelle Memorial Institute, Columbus, Ohio. Proceedings of the Annual Meeting, 1946, Engineering College Research Association.. "...The great thing is that research is coming into its rightful place, and that engineers, broadly trained by alert and statesmanlike educators, will be leaders in this growing field."

Chemical Condensates

Ed. F. Degering, F.A.I.C.

On an income per child (age 5 to 17) basis, California is four and one-half times as able to support an educational program as is Mississippi. Next in order of decreasing ability to pay are, New York, Washington, Connecticut, Nevada, Illinois.

A new procedure for the separation of *beta*-picoline (used in the synthesis of nicotinic acid), from *gamma*-picoline and 2,6-lutidine, has been developed by Donald F. Othmer, F.A.I.C., and Sidney A. Savitt of Polytechnic Institute of Brooklyn.

The man who is industrious by habit it is the only man who wins. The man who is not industrious except when driven to it, or when it occurs to him, accomplishes little.

—Elbert Hubbard

I am told that there be folks who pooh-pooh college training and sneeze on mention of a University degree. Usually these good people have no university degrees, but have been greatly helped by those who have.

Elbert Hubbard

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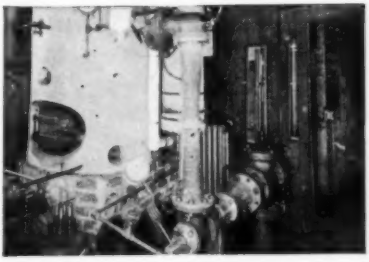

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Streptomycin, according to Drs. H. E. Alexander and G. Leidy of Columbia University College of Physicians and Surgeons, is destined for a life-saving role in the treatment of influenzal meningitis.

A solution of polyvinyl carbazole in tetrahydrofuran can be cast in thin foils and used as mica substitutes in condenser dielectrics, according to G. M. Kline, F.A.I.C., of the National Bureau of Standards.

New I.C.C. Regulations

The Interstate Commerce Commission, has amended Section 233 of the Transportation of Explosives Act, to include radioactive materials and new regulations for their transportation.

Hamor Appointed Editor

Dr. William A. Hamor, F.A.I.C., assistant director of Mellon Institute, Pittsburgh, Pennsylvania, has been appointed editor of Chemical Monographs of the American Chemical Society.

General Chemical Merged

Effective on November first, General Chemical Company was merged with its parent company, Allied Chemical and Dye Corporation. Its business is now conducted under the name of: General Chemical Division of Allied Chemical and Dye Corporation. No change in management or operations was made.

Peters Represents Glyco

Dr. Eugene M. McCauliff, F.A.I.C., technical sales director of Glyco Products Company, Inc., of Brooklyn, N. Y., announces that Dr. Franklin T. Peters has been appointed technical service representative of the company for the Northern New Jersey area.

Silver Anniversary

The 1948 Annual Meeting of The American Institute of Chemists will be held Saturday, May 8, 1948, at the Hotel Pennsylvania, New York, N. Y. The program, which will be announced later, will feature the Silver Anniversary of the Institute, which was founded in New York in 1923.

Calco Plants Start Operation

The first production unit of the New Willow Island, West Virgina, plant of Calco Chemical Division, American Cyanamid Company, is now in operation. A second unit is scheduled for operation in January.

Taylor Elected Chairman

Maurice C. Taylor, F. A. I. C., resident director of research and development, Mathieson Alkali Works, Inc., Niagara Falls, New York, has been elected chairman of the Western New York Section of the American Chemical Society.

Meyer Speaks on Chemists' Status

Dr. Martin Meyer, F.A.I.C., recently spoke before the Graduate Chemical Society of Brooklyn College, Brooklyn, N Y., on "Chemistry and the Chemist Today."

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